$\boxed{T_2}$ $p(x) = \begin{cases} e^{-x}, & x \geq 0 \\ 0, & x < 0 \end{cases}$ $n = 25$

c) $\bar{x}$: $\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$

ЦПТ: $\{\xi_k\}$ – пос-ть одинаково распред. случ. вел. с конечными 2ыми моментами

$$\Rightarrow \frac{\sum_{k=1}^{n} \xi_k - M[\sum \xi_k]}{\sqrt{D[\sum \xi_k]}} \xrightarrow{F} \eta \sim N(0,1)$$

$$M[\xi_k] = \int_0^{+\infty} x e^{-x} dx = x(-e^{-x})\Big|_0^{+\infty} - \int_0^{+\infty} -e^{-x} dx =$$

$$= -\left(\frac{x+1}{e^x}\right)\Big|_0^{+\infty} = 1$$

$$M[\xi_k^2] = \int_0^{+\infty} x^2 e^{-x} dx = 2$$

$$D[\xi_k] = M[\xi_k^2] - M^2[\xi_k] = 2 - 1 = 1$$

$$\Rightarrow \frac{\sum_{k=1}^{n} \xi_k - 1 \cdot n}{\sqrt{1 \cdot n}} = n\frac{\frac{1}{n}\sum \xi_k - 1}{\sqrt{n}} = \cancel{\sqrt{n}}$$

$$= \sqrt{n}\left(\frac{1}{n}\sum_{k=1}^{n} \xi_k - 1\right) \sim N(0,1)$$

т.е. $\sqrt{n}\,\bar{x} - \sqrt{n} \xrightarrow{F} \eta \sim N(0,1)$

$$\bar{x} = \frac{\eta}{\sqrt{n}} + 1 \Rightarrow \bar{x} \sim N(\underbrace{1}_{=b}, \underbrace{\frac{1}{n}}_{=a^2})$$

$$p(\bar{x}) = \frac{1}{\sqrt{2\pi}\,a} e^{-\frac{(\bar{x}-b)^2}{2a^2}} = \frac{\sqrt{n}}{\sqrt{2\pi}} \exp\left(\frac{-n(\bar{x}-1)^2}{2}\right),$$

4) $\gamma = \dfrac{\mu_3}{\mu_2^{3/2}}$ $\qquad \mu_2 = D[\xi_k] = 1$

$$\mu_3 = M[(\xi_k - M[\xi_k])^3] = M[(\xi_k - 1)^3] =$$

$$= \int_0^{+\infty} (x-1)^3 e^{-x}\,dx = 2$$

$$\gamma = \frac{2}{1^{3/2}} = 2$$